ISSUE FEATURES

SAR SCENE

The Canadian Search and Rescue Magazine Online

Winter 2009 Vol. 18, #3

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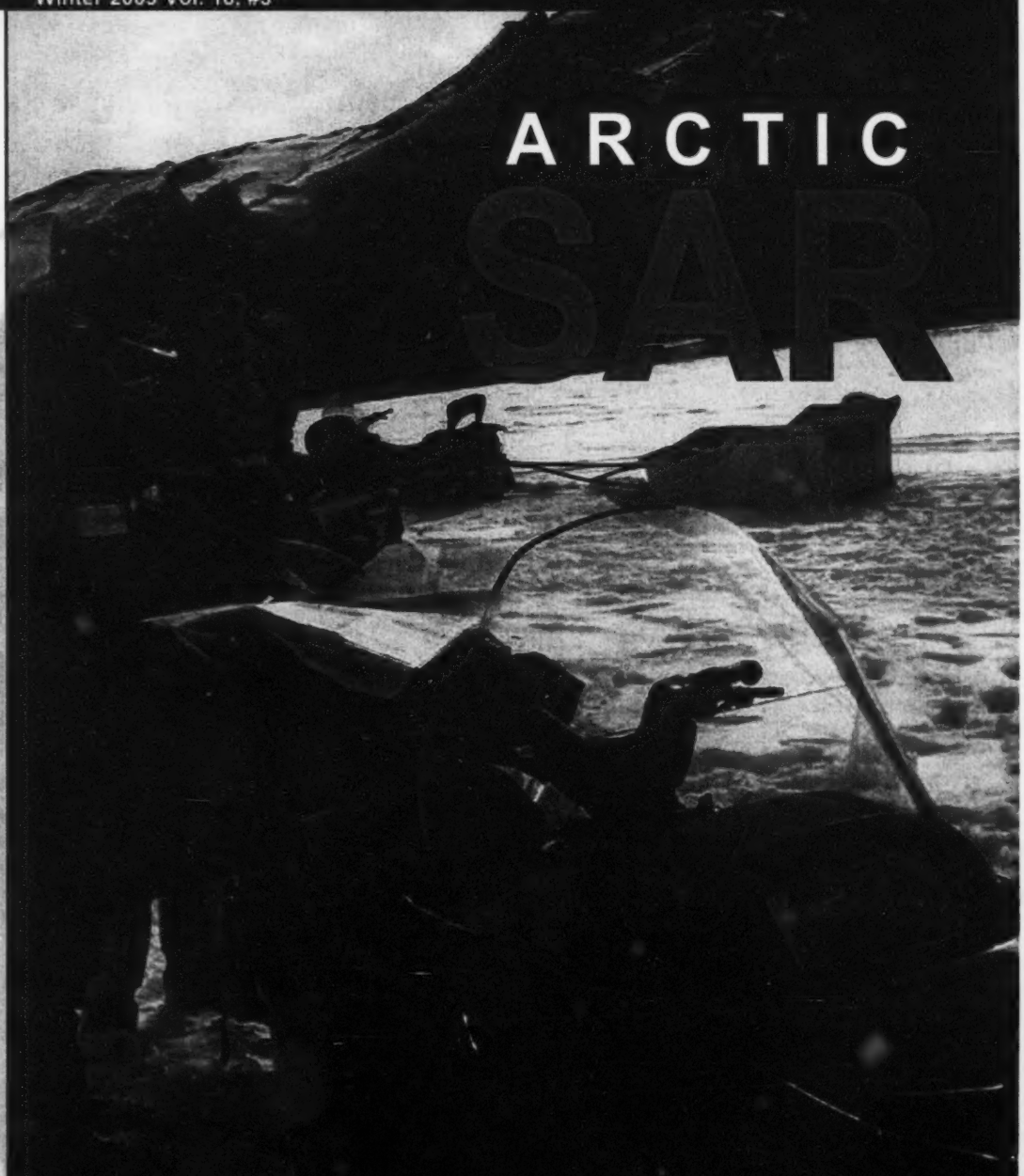

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Cover photo courtesy of Julia Landry

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CS09-0229

FROM THE EXECUTIVE DIRECTOR'S DESK

Géraldine Underdown, NSS' Executive Director

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Northern SAR

As most of you know, the North is taking on greater significance with the Canadian government due to increasing environmental awareness and concerns regarding the impact of climate change, coupled with potential economic growth.

The management of changes in the North would likely require a very complex and inter-related series of decisions, which include SAR. How would the SAR system have to adapt in order to respond to the growing SAR-related risks of human activities and to mitigate or overcome the challenges already noted in the current SAR system? Granted, the SAR system cannot be all things to all people, but should it be based on a traditional subsistence-living lifestyle, or on an expanding industrial and marine-based economy?

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First and foremost, personal responsibility is essential, and that necessitates proper trip planning. Assessing risks, advance preparation, communicating your intent, knowing your capabilities and limitations, as well as that of your equipment, could save your life. We are working on a National Prevention Strategy that will utilize broad public awareness and targeted outreach to reach key audiences. A core component will be the nationalization of a successful New SAR Initiatives Fund project, *AdventureSmart*, from British Columbia. This umbrella program uses online and onsite awareness to focus on three key messages – trip planning (JUDGEMENT), training (KNOWLEDGE) and the ten essentials (EQUIPMENT), as well as targeted outreach to change behaviour. Leveraging the expertise of Search and Rescue Volunteer

Association of Canada (SARVAC) members, and with the support of our federal and provincial/territorial SAR partners, we hope to bring *AdventureSmart*'s message "Get Informed and Go Outdoors" to recreationalists across Canada.

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I welcome your comments and suggestions. If you would like to share them with me, please e-mail me at sarscenemag@nss-snrs.gc.ca. ■

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Once on scene, approximately 65 miles (105 kilometres) north of Fogo Island or 100 miles (160 kilometres) north of Gander, the CH-149 Cormorant helicopter crew could not locate the vessel, the Seafaring Legend, as it had already gone under, so the crew then searched for a life raft. Despite unfavourable at-sea conditions, they found two.

"The winds were approximately 35 knots (65 km/h) and we assessed the sea state to be the equivalent to a sea state seven, which in general terms means 15 to 20 foot (4.5 to 6 meter) swells," said Major Steve Reid, Aircraft Commander on the mission.

These kinds of conditions cause particular grief for search and rescue crews when searching for a life raft is involved. "The wind and the sea state is what made it the most challenging. A life raft in the water can be challenging even when it's dead calm with no wind so the sea state definitely added to the difficulty of performing the mission," said Sergeant Morgan Biderman, a 103 Sqn search and rescue technician (SAR Tech).

The first life raft held one member of the Seafaring Legend. He was successfully hoisted off the life raft and into the helicopter. Once inside, he alerted the crew that there was a second life raft with two occupants on board. It was found, along with two other survivors of the sunken vessel. The second hoist caused more problems than the first one, but thanks to a highly efficient and adaptable team, a new approach to the situation was taken.

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RBC Foundation funding helps swimming safety tips reach more Ontarians

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The massive translation project is part of the Lifesaving Society's ongoing commitment to teach all children about the importance of water safety and drowning prevention skills. The translated information package includes a letter explaining the Swim to Survive program during school time, a handout explaining why all children should learn basic survival swimming skills, and a letter at the end of the program detailing what the children have learned and the importance of enrolling their children in additional swimming instruction. It is directed to parents and guardians, and until now, had only been available in English and French.

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The translation efforts would not have been possible without a recent $18,000 grant from the RBC Foundation, which allowed the Lifesaving Society to convert the Swim to Survive parent information package into the following languages: Arabic; Chinese; Czech; Farsi; Greek; Gujarati; Hindi; Hungarian; Italian; Khmer; Korean; Macedonian; Pashto; Polish; Portuguese; Punjabi; Romanian; Russian; Somali; Spanish; Tagalog; Tamil; Twi; Ukrainian; Urdu and Vietnamese.

"RBC has a long-standing commitment to diversity, welcoming new Canadians and doing our part to enable their success," said Tony DePascal, RBC's Vice President, Commercial Financial Services – Peel Supply Chain. "From financial advice to safety information, RBC knows it is important to remove language barriers and ensure equal access to information. We welcome this opportunity to support Canada's diverse communities by helping the Lifesaving Society to ensure this crucial safety information is fully accessible to all."

According to Byers, access to Swim to Survive is especially significant for new Canadians living in Ontario. "Ontario has the most culturally diverse population in Canada, with more than one in four residents born outside the country. Because this province has an abundance of fresh water, swimming lessons and drowning prevention techniques are especially important here." The Swim to Survive program is funded by the Ministry of Education and other partners, and launched in 2005. Through elementary schools, it teaches children in grade three the minimum standard of swimming ability for survival after an unexpected fall into the water. Since it began, more than 200,000 children have completed the program.

Swim to Survive teaches children three basic skills in sequence: roll into deep water; tread water for one minute; and swim 50 metres (Lifesaving statistics show that most people who drown are less than 15 metres from shore or safety). It is not meant as a replacement for standard swimming lessons; however, the program is an important first step to being safe around water, and could make the difference between life and death when immersion in water is sudden and unexpected.

According to the 2009 Ontario Drowning Report Update, released in the summer by the Lifesaving Society, nearly 500 Canadians die each year in water-related incidents. The number of water-related deaths in Ontario is on the rise. In Ontario in 2005 (most recent statistics), there were 164 deaths, or 33 percent of the national total. There were 492 deaths by drowning in Canada in 2005, a 14 percent increase over 2004. Ontario led the way with a 24 percent increase.

For more information, please visit www.lifesavingsociety.com. ■

New SAR vehicles in Nunavut

Twelve Argo Avenger 750 EFi all-terrain vehicles (ATVs) have been delivered to 12 Nunavut communities in order to help with their search and rescue needs. These ATVs have been built in Ontario and are amphibian.

The new additions were provided through the International Polar Year Fund, which is an internationally coordinated campaign of research in polar regions. It involves a wide range of research disciplines and aims to educate and involve the public, as well as train future scientists, engineers and leaders. ■

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The new Commander of Air Command and Chief of the Air Staff, Lieutenant-General André Deschamps, assumed command from Lieutenant-General Angus Watt at a ceremony presided over by General Walter Natynczyk, Chief of the Defence Staff.

"Through the leadership of Lieutenant-General Watt, the Air Force has risen to the challenge of significantly increased domestic and operational demands," said the Honourable Peter MacKay, Minister of National Defence and Minister for the Atlantic Gateway. "As Lieutenant-General Deschamps takes command, I have every confidence that the Air Force will continue to be ready to respond to Canada's needs at home and abroad."

"The Air Force has a great future," said LGen Deschamps. "In line with the Canada First Defence Strategy, we've made great progress

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The new Commander for Canada's Air Force, Lieutenant-General André Deschamps

Photo credit: *MCpl Roy MacLellan*

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"I intend to keep the pace moving forward, integrate our new equipment and continue to renew our capabilities. This is a great team with great equipment and great training, delivering world class results. I am proud to lead Canada's Air Force into the future."

As the senior Air Force officer in the Canadian military, the Commander of Air Command and Chief of the Air Staff acts as an advisor to the Chief of the Defence Staff on strategic Air Force issues. He is also responsible for training, generating and maintaining combat capable, multi-purpose air forces to meet Canada's defence objectives.

LGen Deschamps has accumulated more than 7,500 flying hours, flying aircraft such as the CT-134 Musketeer, CF-104 Starfighter and CC-130 Hercules. His recent appointments have included Commander of the Theatre Support Element in southwest Asia, Wing Commander of 8 Wing Trenton, Chief of Staff Operations at Canadian Expeditionary Force Command in Ottawa, and Assistant Chief of the Air Staff.

LGen Watt is retiring after 37 years of distinguished service with the Air Force. ■

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Family of former 12 Wing member receives Memorial (Silver) Cross

By 2Lt Thomas C Edelson - 12 Wing Shearwater / Aviation.ca

On September 4, 2009, the Memorial (Silver) Cross was awarded to the relatives of Capt. Juli-Ann Mackenzie, by the Lieutenant-Govenor of Saskatchewan, the Honourable Dr. Gordon L. Barnhart. Capt. Mackenzie was a former 443 Squadron Sea King pilot who died tragically in a CH146 Griffon crash while conducting a search and rescue (SAR) mission over Labrador on July 18, 2002. The crash also killed Capt. Colin Sonoski and seriously injured Cpl. David Pawulski and Sgt. Mario Michaud.

The award was presented to her widower, Capt. Rob McMullen, as well as her parents, Mrs. Candys MacKenzie and Mr. Rick Mackenzie of Weyburn, Saskatchewan. Capt McMullen is a former MARS officer who has recently been selected for the pilot trade and is posted to CFB Kingston while awaiting primary flight training.

Capt. MacKenzie joined the Canadian Air Force in 1991 and attended basic training in Chilliwack, BC, before pursuing studies at Royal Roads Military College in Victoria, BC. Following graduation, she underwent flight training in Portage La Prairie, MB, and Moose Jaw, SK, before receiving her wings in April of 1997. She was then posted to 443 Squadron at Patricia Bay, near Victoria, where she flew the CH124 Sea King helicopter until 2001.

The Memorial Cross, often referred to as the Silver Cross for Mothers, was created in 1919 to commemorate the dead of the First World War. The Cross was reinstituted in August 1940 for the Second World War and again in 1950 for the Korean conflict. As of January 1, 2007, all CF deaths that are related to military service now carry entitlement to the Memorial Cross. This new measure recognizes the unique sacrifice and danger inherent in all military activities: those who die in training accidents, conducting SAR missions or fighting fires or floods—will now be eligible for the same honour as those in foreign military operations. ■

AFAC annual general meeting and awards

On October 17, 2009, the Air Force Association of Canada (AFAC) held its annual general meeting and annual awards banquet at the National Air Force Museum of Canada at 8 Wing Trenton.

One of the eight awards to be given at the banquet was the Andrew Mynarski, VC, Memorial Trophy (search and rescue award). The trophy was awarded to the combined units of 413 Squadron, 424 Squadron, 439 Squadron and the Joint Rescue Coordination Centre – 8 Wing Trenton. ■

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The Memorial Cross, often referred to as the Silver Cross for Mothers, was created in 1919 to commemorate the dead of the First World War. The Cross was reinstituted in August 1940 for the Second World War and again in 1950 for the Korean conflict. As of January 1, 2007, all CF deaths that are related to military service now carry entitlement to the Memorial Cross. This new measure recognizes the unique sacrifice and danger inherent in all military activities: those who die in training accidents, conducting SAR missions or fighting fires or floods—will now be eligible for the same honour as those in foreign military operations. ■

AFAC annual general meeting and awards

On October 17, 2009, the Air Force Association of Canada (AFAC) held its annual general meeting and annual awards banquet at the National Air Force Museum of Canada at 8 Wing Trenton.

One of the eight awards to be given at the banquet was the Andrew Mynarski, VC, Memorial Trophy (search and rescue award). The trophy was awarded to the combined units of 413 Squadron, 424 Squadron, 439 Squadron and the Joint Rescue Coordination Centre – 8 Wing Trenton. ■

Prevention and cooperation: SEARCH AND RESCUE IN NUNAVUT'S NATIONAL PARKS

By Andrew Maher, Public Safety Coordinator, Nunavut Field Unit of Parks Canada

Responding to personal locator beacon distress calls, snowmobile searches at forty below, plucking climbers off 1000-foot cliffs, evacuating injured hikers from the top of the world, and hazing polar bears away from park visitors have all been a part of the search and rescue (SAR) services provided in Nunavut's national parks. Despite the need for an occasional dramatic SAR response, the bulk of Parks Canada's SAR program in Nunavut is built on the simple principles of prevention and cooperation.

Nunavut is a land of extremes - in temperature, weather, length of daylight (or lack thereof), and remoteness. Given these extremes, it would be easy to assume that few people visit the territory or that those who live here never leave the relative comfort of their homes. In fact, visitors to the territory and Nunavummiut (Nunavut residents) travel widely on the land in all seasons and enjoy a range of traditional and modern activities. Whether Inuit, Northerner, or visitor, those travelling here could be confronted by numerous hazards caused by wildlife, terrain, climate, and isolation, which sometimes result in the need for SAR assistance.

Many who venture out on the land from Nunavut's communities enter or travel through one of Nunavut's four national parks – Auyuittuq, Quttinirpaaq, Sirmilik, and Ukkusiksalik – which cover a total of over 100,000 square kilometres or an area roughly twice the size of Nova Scotia. Within the park boundaries, the Parks Canada Agency is responsible for public safety, which includes performing SAR operations when the need arises. With an average of over 1000 tourists entering these parks each year, and far more Inuit who are not required to register their travel in the park, the 25 or so staff spread throughout the four parks would be quickly overwhelmed if not for a focus on preventing incidents before they occur and cooperation with our local and regional SAR partners.

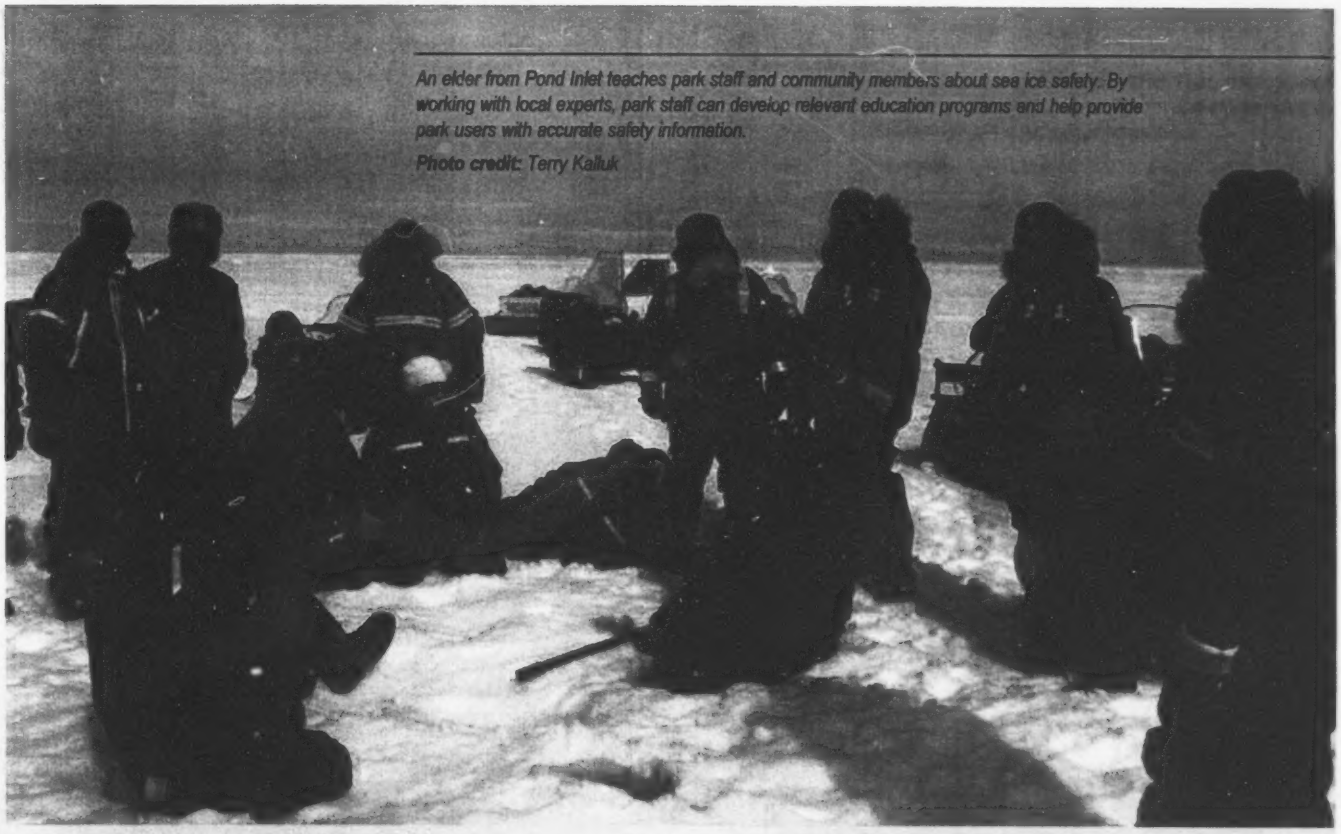
Possible hazards

Polar bears, avalanches, dangerous river crossings, thin ice, hypothermia, inaccessibility, and a lack of reliable communications are just a few of the hazards that one may encounter in Nunavut's national parks. These hazards often carry significant consequences, both from the hazard itself and from the challenges of performing SAR operations in this vast land with minimal resources. In this context, incident prevention is acutely important. For Parks Canada, this is achieved by understanding the hazards and their mitigations, and then through public education.

Fortunately for Parks Canada, there is a wealth of knowledge about the hazards and effective mitigations available from elders and other experienced members of the local Inuit communities that surround the parks. Parks Canada relies on the knowledge provided locally and by other experts to highlight hazards

River crossings are one of the most significant hazards in Auyuittuq National Park. Park staff keep their swiftwater rescue skills sharp in an annual rescue course.

Photo credit: Parks Canada



An elder from Pond Inlet teaches park staff and community members about sea ice safety. By working with local experts, park staff can develop relevant education programs and help provide park users with accurate safety information.

Photo credit: Terry Kalluk

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Safety education for visitors

For visitors, safety education often begins well before they come to Nunavut either through the Parks Canada website or from information provided by mail or telephone. Visitors receive a pre-trip information package that outlines relevant hazards and the measures that they can take to make their trip safer. Upon arrival in the local community, visitors participate in a mandatory orientation session before they enter the park, during which an experienced park staff member reviews the hazards specific to their travel plans and ensures that their experience, equipment, and plans account for the severity of hazards that they are likely to encounter.

Self-reliance is emphasized so that visitors understand that they must be sufficiently prepared to manage risks and perform some measure of self-rescue if needed. While in the park, visitors may be provided up-to-date information by checking in with the park office by satellite phone or radio, or they may encounter park staff while on patrol.

As Inuit, most members of the local communities are not required to participate in mandatory orientation sessions before entering the park. For these park users, Parks Canada provides safety education through school programs and public information. These programs focus on hazards that are relevant to the types of activities that local people perform in the parks and are often developed using local knowledge or with community cooperation. Parks staff also post current weather conditions and information about hazards, including weather and sea ice conditions, or report on hazards in specific areas of the parks used for travel or traditional activities.

Cooperation

Although the national parks in Nunavut are expansive, the park operations consist of just a few seasonal and full-time staff and limited equipment dedicated to public safety. Fortunately, our prevention program, combined with the strong land skills and self-reliance of most park users, effectively reduce the number of incidents to just a handful each year. Unfortunately, the incidents that do occur, even if seemingly minor in nature, are often challenging due to the large distances, complex terrain, unpredictable weather, and limited resources. These complexities, combined with park boundaries that are not discernable on the landscape and rescue operations that may span several land authorities, require significant cooperation between Parks Canada, local volunteer SAR teams, and territorial and national government departments or agencies.

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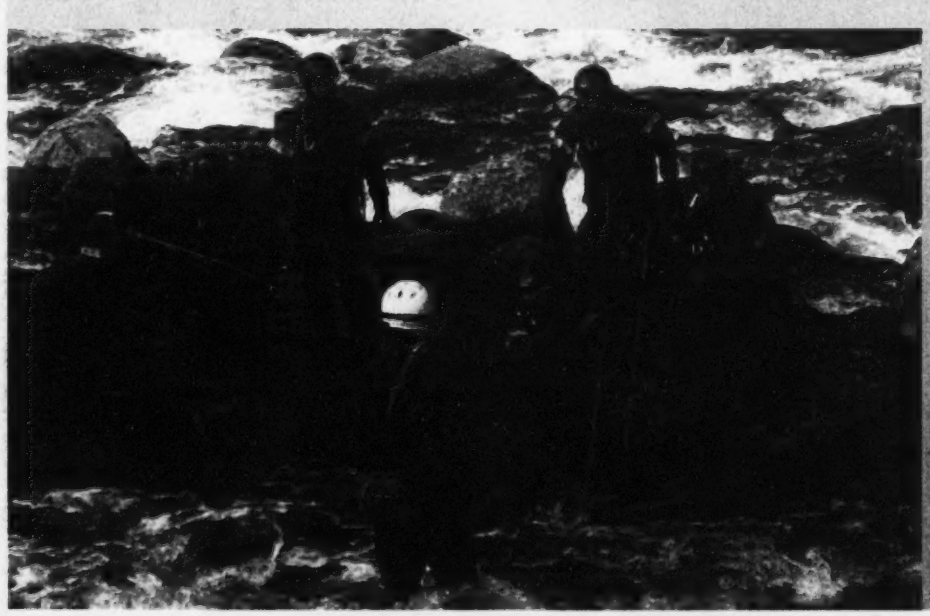
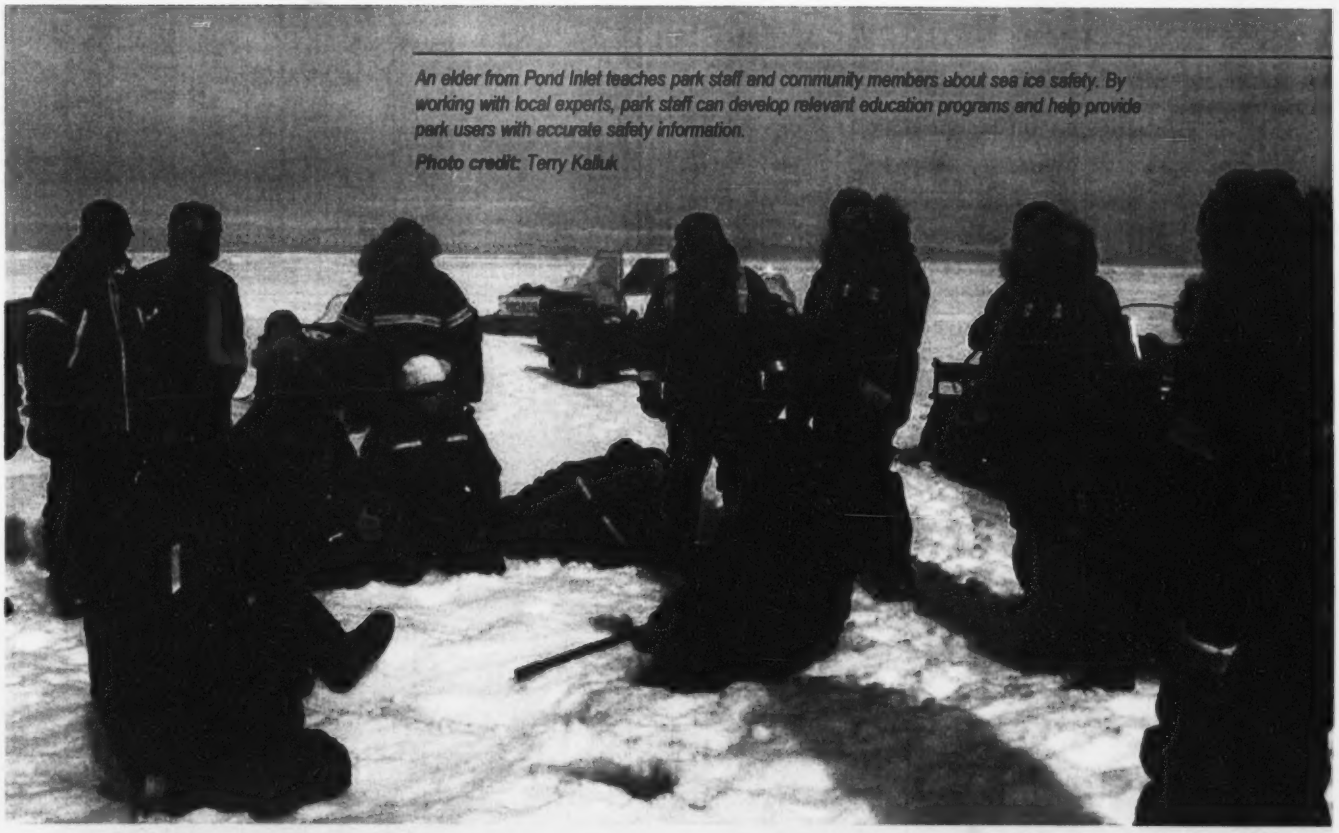


River crossings are one of the most significant hazards in Auyuittuq National Park. Park staff keep their swiftwater rescue skills sharp in an annual rescue course.

Photo credit: Parks Canada



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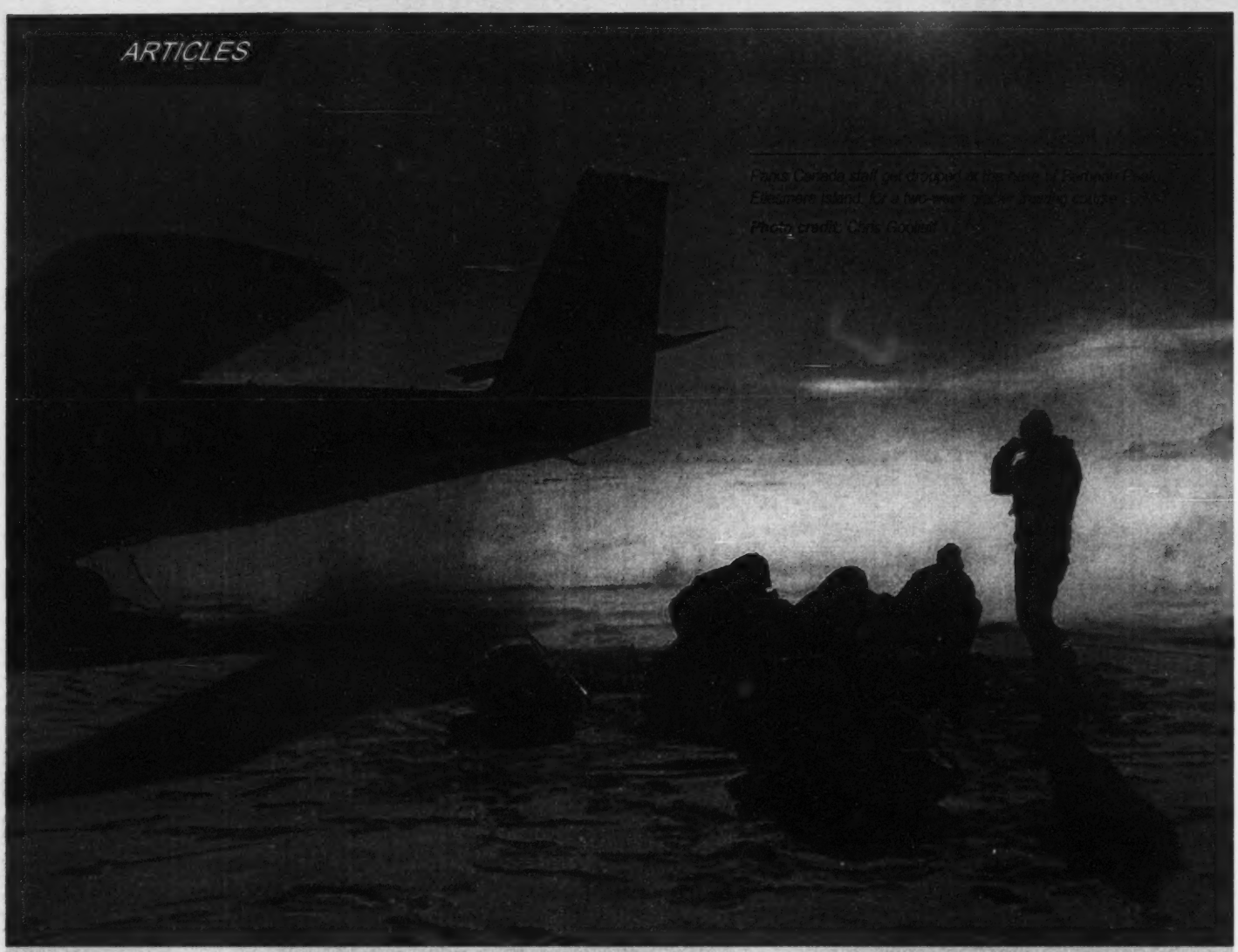


Parks Canada staff get dropped at the base of Bartlett Peak, Ellesmere Island, for a two-week alpine training course.
Photo credit: Chris Goodes

Each of these partners can provide unique assets to SAR operations. Parks Canada staff often have specialized training (e.g. avalanche rescue, crevasse rescue, advanced first aid, and swift water rescue) and equipment (e.g. wheeled stretchers, oxygen warmers, and response vehicles or vessels). Local volunteer SAR teams, working with the Nunavut Emergency Measures Organization, can usually mobilize many searchers, have an intimate knowledge of the area, and can organize many of the local logistics needed for searches. In large searches, or when specialized resources are required, the Department of National Defence, including the Rangers, as well as the Coast Guard, may be called to assist.

These partnerships are not just built on formal agreements. At the local level, park staff and volunteer SAR teams may cooperate on incidents and training, consult on risk assessments or safety plans, and provide reciprocal support for developing new projects. In most communities, Parks Canada staff are active members of the SAR teams participating in meetings, exercises, and incident response. Parks Canada will often provide staff and equipment for SAR incidents outside of park boundaries, and volunteer SAR teams also assist Parks Canada with SAR operations in the park. As with any partnership, issues may arise, but in the spirit of cooperation so ingrained in Inuit culture, they are usually quickly overcome in favour of what is best for the lost or injured party.

Providing SAR within Nunavut's national parks may appear to be a daunting task, but through public education and collaborating as part of a larger SAR team, Parks Canada strives ever closer to achieving its goal of providing safe and enjoyable experiences to all park users. ■

Andrew Maher currently lives in Pond Inlet, Nunavut, where he works as the Senior Resource Management and Public Safety Specialist for Sirmilik National Park and the Public Safety Coordinator for the Nunavut Field Unit of Parks Canada. Drawing on previous arctic and mountain experiences, Andrew is always seeking ways to increase public safety awareness through integration with local knowledge and youth education. When not working, Andrew enjoys exploring northern Baffin Island on skis, by kayak, and with his dog team.

A successful SAREX 2009 in Gander

By Captain Tony Sheppard, 9 Wing Gander

After countless hours of planning, preparation, meetings, contracts, contract amendments and amendments to the amendments, the rubber finally hit the tarmac for SAREX 09 in Gander, N.L., on September 21, 2009.

This year, 9 Wing Gander and 103 Search and Rescue Squadron had the honour of hosting SAREX from September 20 to 26, 2009. The wing was flooded by almost 300 participants and observers from all across Canada and beyond. The Canadian Forces (CF) search and rescue (SAR) teams were joined by teams from a number of different areas of SAR. Teams from the Canadian Civil Air SAR Association (CASARA) from NL, NS, and last year's CASARA winner from Thunder Bay, ON, were also in attendance. To give the event an international flavour, the United States Air Force provided two teams, and an observer from the Danish SAR organization also attended.

Competitive events

Canadian Air Force squadrons and other organizations involved in the delivery of SAR services in Canada participate in this annual exercise. Teams are comprised of SAR technicians, aircrew and maintenance crews. SAREX participants compete in a series of judged events to ensure standardization in techniques and procedures related to SAR.

The events consisted of the provision of medical services, rescue, a search, helicopter skills and parachuting accuracy. The range of events is designed to encompass the whole SAR team, so that all members are evaluated. All events are judged and points are awarded to each team as they compete in their individual events. These events are all designed to ensure that SAR

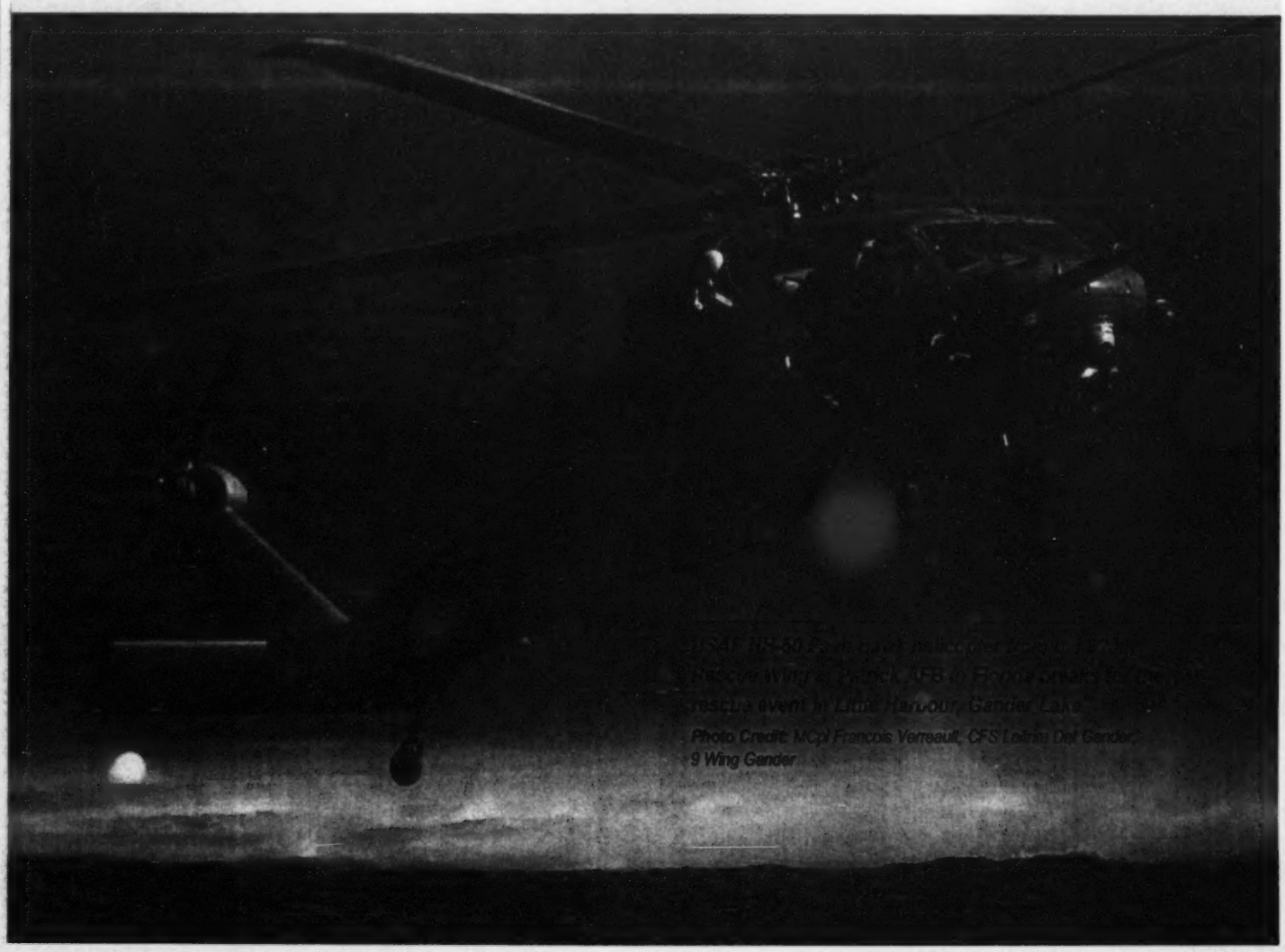
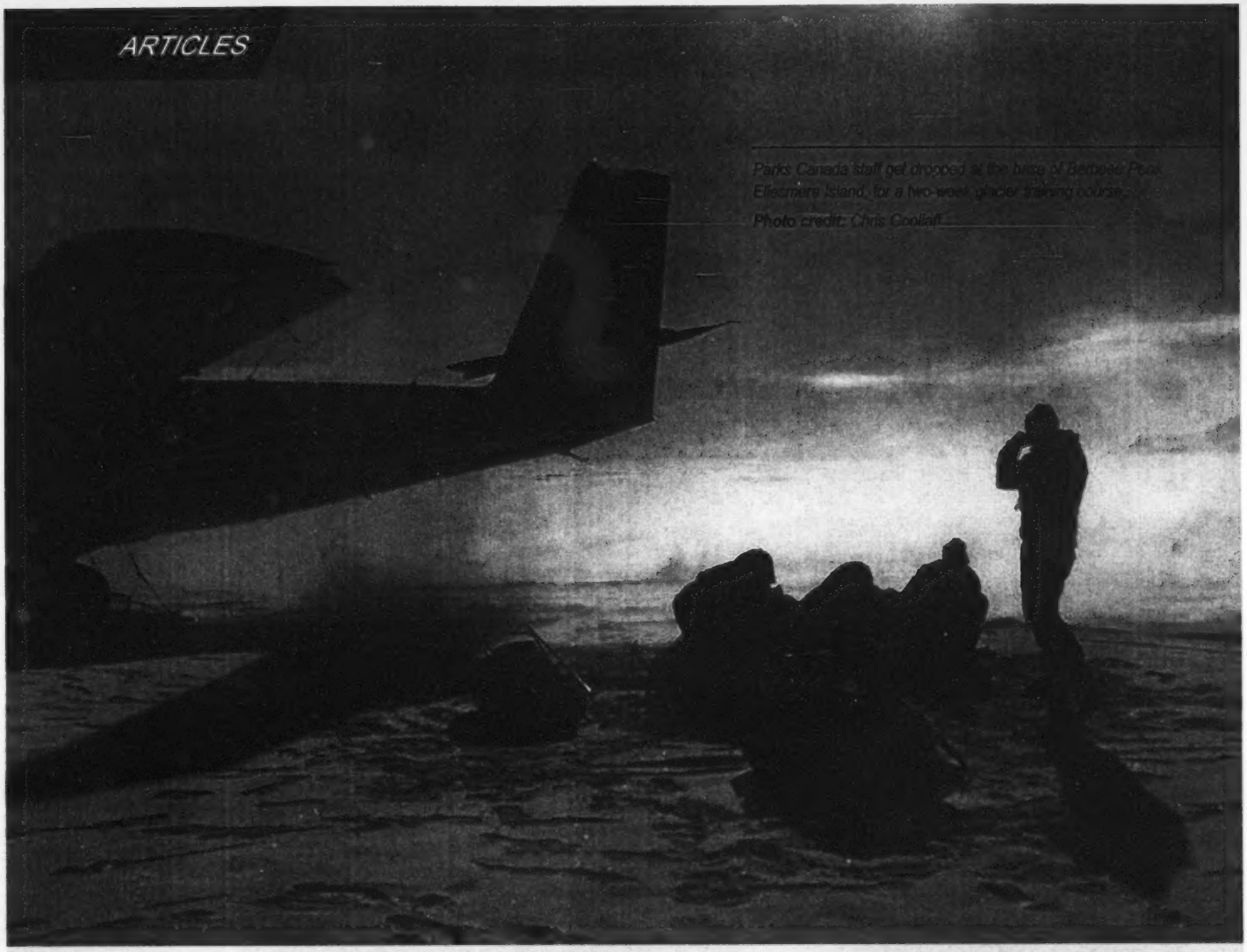


Photo Credit: MCpl Francois Verreault, CFS Labrai Det Gander, 9 Wing Gander



Parks Canada staff get dropped at the base of Belmore Peak, Ellesmere Island, for a two-week glacier training course.

Photo credit: Chris Cooliaff

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USAF HH-60 Pave Hawk helicopter from the 347th Rescue Wing at Patrick AFB in Florida greets for the rescue event in Little Harbour, Gander Lake.

Photo Credit: MCpl Francois Verreault, CFS Leamn Det Gander, 9 Wing Gander

activities are conducted in the most efficient means possible and that available resources are utilized to their maximum capability.

"National SAREX 09 has been a tremendous success. It goes without saying that we've sharpened our skills, but equally important is the fact that all participants were given an opportunity to exchange information and compare techniques," stated Major Stephen Reid, Commanding Officer of 103 Search and Rescue Squadron, on completion of SAREX 09. "These exercises allow us to take great leaps forward towards enhancing a seamless and effective national SAR system, as well as strengthening partnerships between professional and volunteer organizations at all levels."

Positive feedback

From all accounts SAREX 09 was a resounding success and there has been nothing but positive feedback from attendees. Participants commented on the great hospitality that was shown to all who attended, and the excellent venues provided to present both realistic and valuable training opportunities.

"103 Search and Rescue Squadron and 9 Wing Gander are pleased to announce that National SAREX 09 was 100% successful. Blessed with good weather, the competing teams were able to complete every objective in the five main events. A year-long effort of planning and organizing has paid dividends with a diverse, competitive and rewarding exercise," stated Major William Wyss, SAREX 09 Officer of Primary Interest.

Captain Peter Savage, SAREX 09 Operations coordinator, stated that "This past week was the finest example of the flexibility of air power that I have experienced in 19 years of service. It was an ambitious schedule, and the troops rose to the challenge as they always do, with a smile and a nod, confident that they and their machines were ready to do the job. I am ferociously proud of the SAR team, and consider myself very, very fortunate to be considered one of them."

Gander, considered a "modest" wing, pooled all its resources to pull off SAREX 09. A high percentage of wing members were involved in SAREX 09 in one capacity or another, and it was very much a team effort and a great experience for all involved.

"We have a small team here in 9 Wing Gander and a great deal of effort was put forth by all members to ensure that SAREX would be a resounding success. Our team ensured that all participants had a safe and rewarding experience," commented Lieutenant-Colonel Chris Conway, Commander 9 Wing Gander, at the close of SAREX 09. ■

Captain Tony Sheppard is a Reserve Public Affairs Officer at 9 Wing Gander.

MCpl Edward Vokey, SAR Tech at 103 SAR Sqn, administers medical assistance to an aircraft crash victim in the medical event at Little Harbour on Gander Lake.

***Photo credit:** MCpl Francois Verreault, CFS Leitrim Det Gander, 9 Wing Gander*

SAREX 09 event winners

By Captain Tony Sheppard, 9 Wing Gander

The CASARA St. John's, NL, team accepting the CASARA National SAR Excellence Award. From left to right: Keith White (Spotter), Dan Butler (Navigator), Major-General J.Y. (Yvan) Blondin (Commander 1 Canadian Air Division Winnipeg, MB), John Davidson (National President CASARA), Sharon Kenny (Spotter), and Rick O'Neill (Pilot).

***Photo credit:** MCpl Francois Verreault, CFS Leitrim Det Gander, 9 Wing Gander*

Team Spirit Award – *for the unit demonstrating the best "esprit de corps" in all phases of SAREX:*
Combat Support SQN – this team was comprised of a combination of squadron members for SAREX 09 from 417 Sqn from 4 Wing Cold Lake, AB, 439 Sqn from 3 Wing Bagotville, QC and 444 Sqn from 5 Wing Goose Bay, NL

Search and Rescue Trophy – *for the unit with the best performance in the search event:*
413 Sqn from 14 Wing Greenwood, NS

Allison Trophy – *for the team with the best performance in the parachuting accuracy event:*
435 Sqn from 17 Wing Winnipeg, MB

Leslie L. Irvin Trophy – *for the individual with the best performance in the parachuting event:*
MCpl Carl Portman from 435 Sqn from 17 Wing Winnipeg, MB

Sullivan Trophy – *for the team judged to have performed the best in the medical exercise event:*
424 Sqn from 8 Wing Trenton, ON

Diamond Trophy – *for the unit with the best overall performance in all five events:*
413 Sqn from 14 Wing Greenwood, NS

SAR Tech of the Year Award – *presented to the SAR tech voted best SAR tech by the Para Rescue Association of Canada:* Sgt Morgan Biderman - 103 Search and Rescue Squadron from 9 Wing Gander, NL

CASARA National SAR Excellence Award – *for the CASARA crew who demonstrated the best performance in the search event:* CASARA St. John's, NL

Helicopter Trim Control (HTC) Award - *member who performed the best at the HTC event:*
Corporal Chris Esser - 435 Sqn, Winnipeg, MB

Cormorant Trophy - *helicopter crew that performed the most demanding helicopter rescue of the year:*
442 Sqn, 19 Wing Comox, BC

Rotary Wing Rescue Event Trophy: 442 Sqn, 19 Wing Comox, BC

Fixed Wing Rescue Event Trophy: 413 Sqn, 14 Wing Greenwood, NS

Maintenance Trophy – *best maintenance team in maintenance event:* 413 Sqn, 14 Wing Greenwood, NS ■

Lessons learned from the acquisition of a rescue vehicle

By Roland Hanel, SAR Global 1

For a volunteer search and rescue (SAR) team, the acquisition of its first vehicle represents a substantial milestone. It suggests that the team has reached a critical mass of activity, personnel and funding. There is likely no single vehicle that will meet all the needs of a volunteer SAR team. Numerous features, options, and configurations are possible, though each will be a compromise.

After 13 years, Search and Rescue Global 1 (SAR Global 1), serving Eastern Ontario and Western Quebec, finally bought its first vehicle. For many years after its founding in 1996, our equipment was stored in one member's basement. As the team and its finances grew, we were able to rent a small storage locker. SAR Global 1 now has 100 members, an average of ten missions a year, and activities, such as training, meetings, fundraising, or Hug-a-Tree presentations, almost every day of the week.

Until the purchase of the new truck, each incident required a convoy of private vehicles at the storage locker, and the loss of valuable time. At the scene, operations would be managed from a police command vehicle (if available), the front seat of a member's truck, or a tent belonging to the team. Clearly, these arrangements were far from ideal.

Finding a vehicle

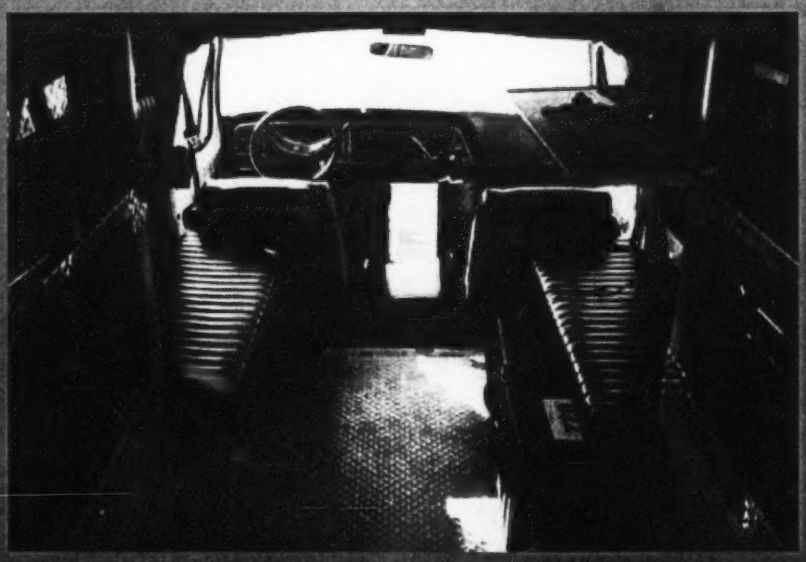
Years of looking finally paid off in the summer of 2009. An area fire department was selling two 1991 Ford F350 diesel trucks, formerly used to transport rescue equipment. Aside from driver and navigator, the vehicles could also seat four passengers, had standing room, and boasted many internal and external storage cabinets.

After some reflection, we bid on the vehicles in the secret auction. Luckily, we were the highest bidder on one of them, though only by $150! Suddenly we found ourselves in a long-term relationship with a temperamental and demanding 18-year old!

Troubles with registration, delays with insurance, inspection requirements, dead batteries, repair bills, the need to modify the vehicle for our own purposes, and that overriding need for indoor parking all had to be addressed. Keeping equipment such as radios, printers and computers warm and charged is a challenge requiring innovation and work. There's a reason why companies with trucks have mechanics and staff to deal with all these issues!

Benefits of the vehicle

Still, a vehicle offers a number of advantages. It is self-propelled and ready to go on very short notice. In addition, this particular truck has a number of specific benefits, including an abundance of interior and exterior cargo compartments, seating for six, as well as the ability to convert easily into a Command Post. There is also less wear and tear on the equipment since it is already loaded. Only one person and vehicle is required to bring the gear now rather than the previous convoy. The speed, effectiveness and professionalism of our response have improved significantly as a result.



The benefits of this vehicle include much storage and seating for six.

Photo credit: Roland Hanel

There are also intangible benefits to owning a vehicle. One of these intangibles is the impact on team morale. A new vehicle provides proof of progress and highlights that fundraising efforts are paying off; but more importantly, the throaty growl of the diesel is really satisfying!

Prompt deployment to an incident with our entire equipment and logistics infrastructure reinforces that SAR volunteers are professionals. The visibility of the team is also enhanced, and we expect this to

SAR Global 1's new vehicle.
Photo credit: Roland Hanel

have a positive effect on recruitment, sponsorship, and public awareness. A dedicated team vehicle capable of getting the job done quickly and efficiently can only improve the perception of the public, the lost person's family, and the tasking agencies.

On the down side, a large truck is no passenger car. It requires greater mechanical and electrical expertise than first thought. Visibility is limited, and two persons are required to back it up safely. The costs to maintain and operate a vehicle will require ongoing fundraising and may delay other projects. Standard operating procedures, maintenance schedules, and training must be developed. Storage, particularly indoor storage with electrical power, is difficult or expensive to obtain, and that is something for which we are still looking. Without indoor parking, the vehicle will soon be covered in snow and may not start due to the cold.

A vehicle underscores the need for a base of operations and other capabilities. It also represents a large increase in commitment required from members. Fortunately, our members have an amazing range of skills, experience, knowledge and contacts. If you need "a village to raise a child", you need "a team to look after a truck!"

Key lessons

Despite the relatively new relationship with our vehicle, we have learned a few key lessons:

- the vehicle will require more time and money than expected;
- it is important to build a relationship with a full-service truck repair company;
- modifications should be made only after the vehicle has been tested in realistic conditions;
- key equipment should be installed so it is removable;
- there is no such thing as too much storage;
- a pre-paid gas card helps keep the accounting simple;
- the team's articles of incorporation are required to properly transfer the vehicle;
- driver training must be developed–a truck doesn't drive like the family minivan.

So far, buying the vehicle has been the right decision for SAR Global 1, as demonstrated by its usefulness at searches and events. As for the longer-term success of this relationship, only time will tell. If you're thinking about "going down this road", we would be happy to tell you more about our experience. You may contact us at operations@sarglobal1.ca. ■

Roland Hanel is the Search Commander and Chief of Operations for Ottawa-Gatineau's Search and Rescue Global 1. In 2008, Roland was awarded a Certificate of Achievement by the National Search and Rescue Secretariat for his contribution to search and rescue in Canada. A lawyer by training, he now works in Emergency Management for Public Safety Canada.

Featured SAR volunteer association:
CASARA NWT

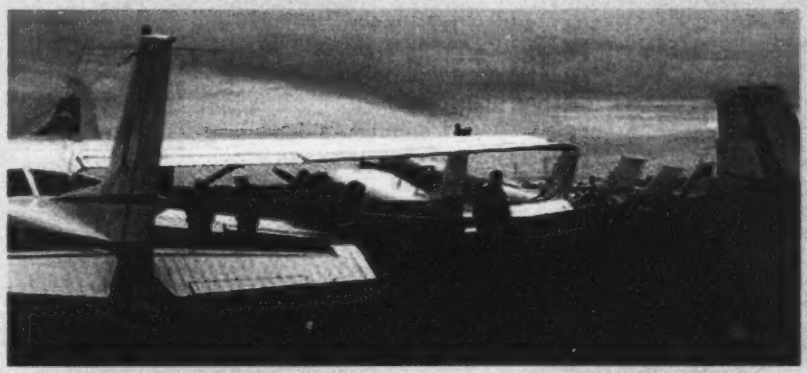
By David Taylor, CASARA Northwest Territories

The Civil Air Search and Rescue Association (CASARA) Northwest Territories (NWT) unit was formed around1989, and is a member of the national CASARA organization. The national CASARA organization was created to channel the efforts of aviators in the general aviation community who wanted to help with search and rescue (SAR) when aircraft went missing. Many of the policies and expectations of the organization are aligned with those parameters in mind.

In the NWT, we currently have about 130 members with zones in Fort Smith, Hay River, Yellowknife, Norman Wells and Inuvik. Yellowknife is the largest community but it is still representative of the difficult environment for a national SAR organization in the north. There is a very small general aviation community and our CASARA membership is predominantly made up of mobile working age people. For instance, almost 50 percent of the 35 Yellowknife members consist of people who have been with the organization for less than two years, and two thirds of the membership is under the age of 50. We have only one volunteer pilot with an aircraft; therefore, maintaining a trained group with the ability to respond is challenging.

Exercises

In Yellowknife, most of our exercises consist of four or five people doing one or two flights on an evening or weekend. This is typical of the other NWT CASARA zone exercises and is representative of an initial call for a search aircraft.



A crew prepares the aircraft for a search flight.

Photo credit: Janet Pound

On the weekend of August 15 and 16, 2009, Yellowknife hosted the CASARA Western Canada Search and Rescue Exercise (WC SAREX). This is an annual exercise that includes participants from the territories and western provinces. The WC SAREX consisted of 13 CASARA aircraft and about 100 people for a one-day exercise. Ninety of those people were from outside of Yellowknife. It was just the second time that Yellowknife was hosting this exercise.

The WC SAREX was conducted to represent how things would work during a major search. A major search occurs when the missing person is not located within a day or so and resources are gathered from other areas to assist. With so many people and aircraft involved over such a short time, the requirement for coordinating the SAR crews is much more challenging than it is with just one crew and one aircraft. To provide maximum exposure to this challenge, the search headquarters staff was rotated throughout the day allowing about 25 people to experience one or more of the six different headquarter roles.

Despite the challenging environment, CASARA NWT is rarely called on to look for missing aircraft. By far, most of our search requests come from the RCMP for help with missing boaters or snowmobilers. For this exercise, we invited our SAR colleagues, including the Canadian Coast Guard Auxiliary (CCGA), Yellowknife Search and Rescue and the RCMP, to participate as targets. A few additional targets were provided by friends and fellow aviators.

In an actual search, there is one target description and everyone flies an area to provide coverage over the probable location of the missing person. For the WC SAREX, we had nine unrelated searches scattered in all directions around Yellowknife. The targets included boaters, paddlers, campers, aircraft and aviation Emergency Locator Transmitters. Although arranging targets like this complicates the planning process, it provides a live

target in most of the search areas and a realistic example of the typical multi-agency search environment in which we operate. It is also very well received by the search crews.

The challenge of communication

Communications between agencies is often a challenge. In order to address this issue, CASARA carries radios commonly used by the other agencies. In Yellowknife, we have a Kenwood radio used by the ground SAR teams and the RCMP. We carry a marine radio to allow us to talk to the CCGA and boats on Great Slave Lake. We also carry cell and satellite telephones to communicate with search coordinators. Each of these devices can be connected to our aviation headsets, which eliminates the noise interference from the aircraft. The Coast Guard and CCGA vessels also carry aviation VHF radios to permit communication with CASARA and military search aircraft.

This arrangement provides maximum flexibility for communications among agencies. For this exercise, each target indicated which radio it had and the aircrew was briefed to attempt to communicate with the target after locating it. This simulated a requirement to communicate with a collaborating agency when a target is located.

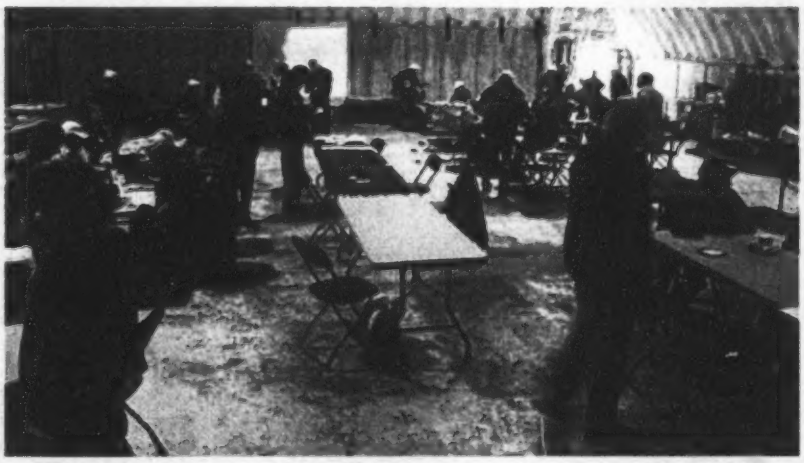
Search HQ program

CASARA has access to the computer program "Search HQ", which was developed by a CASARA member. This program can be used to plot search missions in OziExplorer, which is a low cost off-the-shelf program for viewing maps and programming a Global Positioning System (GPS). With this software combination, it is possible to generate a search pattern, program a GPS and print a map with the search pattern printed on it. Although this technology has been around from quite some time, not all CASARA zones use it.

During WC SAREX, all the search missions were prepared using OziExplorer and Search HQ, and they were available for downloading to a GPS. At the start of the day, all GPS were programmed with all the search patterns. In addition to permitting much more accurate pattern flying, this also provides a number of flight safety benefits. As the route is visible on the GPS, the navigator can easily and quickly detect when a navigation error is taking him or her off track. The search areas were all close to Yellowknife resulting in a number of pinch points where aircraft would be transiting between nearby search areas. To help reduce potential conflicts among transiting and search aircraft, the transit legs were included on the GPS search pattern. Several navigators indicated that this was their first opportunity to fly with a pre-programmed GPS. Since all the GPS were preloaded at the start of the day with all patterns, no extra time was required prior to each flight to program a particular search area. In the event of an actual search, it would also be very easy to assign a crew to a new search area.

By all accounts, WC SAREX was a success. There were 11 participants from the NWT outside of Yellowknife, and five each from Nunavut and the Yukon, with the remainder coming from the four western provinces. The exercise was planned to be a one-day event, but with the arrival of several crews on Thursday night, two flights were flown Friday afternoon. On Saturday, there were 31 more flights for a total of 54 hours of flying. There was ample opportunity for anyone to work a search headquarters position and to participate on a flight. On Sunday, there was also an opportunity for 12 people to do spotter training in the 435 Transport and Research Squadron C130 Hercules that arrived Saturday afternoon.

WC SAREX provided the northern crews with a good example of the complexity of working on a major search. All crews were exposed to techniques and tools used by CASARA members from other western provinces. Everyone had plenty of opportunity to learn something new. From the comments submitted after the exercise, the consensus seems to be that the Yellowknife team did a fantastic job of organizing the event and provided an excellent training opportunity in a safe and enjoyable environment. The event was covered by local French and English radio and print media, as well as English television. ■



During WC SAREX, crews were in the hangar preparing for flights on the Saturday morning.

***Photo credit:** Fred van Driel*

David Taylor has been a CASARA member since 1991 and the Yellowknife Zone Commander and NWT Training Officer since 2000. He has participated in SAR exercises, as well as planning and strategy meetings across the north and he received a Certificate of Achievement from the National Search and Rescue Secretariat in 2001.

Don't cry "wolf":

How to reduce the impact of false ELT alerts

By Carole Smith, NSS

All false emergency locator transmitter (ELT) alerts place a burden on Canada's search and rescue (SAR) system, and most importantly, may divert resources from responding promptly to an actual aircraft in distress. Pilots, air traffic controllers, and flight service specialists who overhear ELT signals on 121.5 MHz also take time away from other duties to forward these alerts to rescue authorities.

A few simple rules of thumb can help aircraft owners, operators, and maintainers minimize false ELT alerts. SAR is a shared responsibility, and we can all do our part.

406 MHz ELTs

An ELT operating on a primary frequency of 406 MHz sends a half-second digital burst transmission once every 50 seconds. This coded signal is captured by the COSPAS-SARSAT satellites, and relayed automatically to SAR authorities. The unique code is then cross-referenced with the Canadian Beacon Registry to obtain vital information about the aircraft in distress.

It is important to note that all 406 MHz ELTs also transmit a continuous analog homing signal on 121.5 MHz. While the 121.5 MHz signal is no longer detected by satellite, it is used by SAR aircraft and ground crews to travel the final distance to the scene of an accident, particularly when visibility is reduced due to precipitation, terrain, vegetation, or darkness.

The following actions can help minimize false alerts from 406 MHz ELTs:

- Register your 406 MHz ELT with the Canadian Beacon Registry System. It's required by the *Canadian Aviation Regulations* (CARs). Registration is free, and can be completed on-line at www.canadianbeaconregistry.forces.gc.ca; by calling 1-877-406-SOS1 (7671); or by faxing a completed registration form to 1-877-406-FAX8 (3298). It is recommended that registration be completed even before installation. If a 406 MHz ELT is activated by mistake while being installed, an alert can be more quickly resolved if a point of contact has been registered.
- Carry out routine operational checks of 406 MHz ELTs in strict accordance with the manufacturer's instructions, as each model has its own unique test procedure. Consider building this protocol into your operating checklists, as applicable. The manufacturer's documentation will also indicate how often these checks should be carried out to ensure that the maximum battery life of the unit is preserved.
- Routine 406 MHz ELT tests that involve transmission of the 121.5 MHz homing signal should only be carried out during the first five min of every UTC hour, and for a duration of five seconds or less.
- The digital signal from a 406 MHz ELT that is turned on for approximately 50 seconds or more will be captured by the SAR satellites, and interpreted as a distress transmission. If you believe that this may have happened in error, contact the Canadian Mission Control Centre at 1-800-211-8107. The staff will welcome your call, and there is no fine or charge levied by the SAR system for inadvertent activations of this kind.
- Keep your Canadian Beacon Registry information up to date. If you or your emergency contacts move, or if you buy, sell, or substantially reconfigure your aircraft (e.g. new paint colours, change floats to wheels, etc.), be sure to update your record. If the aircraft is sold, and the 406 MHz ELT registration is not updated, the original owner will be called if the ELT is triggered. This confusion could delay a rescue effort. It is also a good idea to update your record when the ELT is removed from the aircraft for re-certification or for extended storage.

121.5 MHz ELTs

As of February 1, 2009, signals from ELTs operating on a primary frequency of 121.5 MHz (and/or 243 MHz) are no longer captured by SAR satellites. However, 121.5 MHz is still monitored by air traffic control towers

and flight service stations during their hours of operation, and by some aircraft. ELT signals overheard on 121.5 MHz are reported to SAR authorities as possible distress transmissions.

The following actions can help minimize false alerts from 121.5 MHz ELTs:

- Test your 121.5 MHz ELT only during the first five min of every UTC hour, and for a duration of five seconds or less.
- Contact your closest joint rescue coordination centre if your 121.5 MHz ELT activates by mistake. Include the location, time, and duration of the inadvertent transmission, if known. There is no fine or charge levied by the SAR system, and the rescue controller will welcome the opportunity to focus on another case that might involve an actual aircraft in distress.

An important note on ELT disposal

An increasing number of 121.5 MHz ELTs are being removed from service as aircraft are fitted with newer 406 MHz units. It is very important to ensure that these 121.5 MHz units are properly decommissioned, including removing the battery from the unit and disabling the electronics. Several unnecessary searches have concluded at local garbage dumps due to an emergency beacon that had been improperly discarded. Curious children have also activated ELTs and other types of emergency beacons after finding them around the house or workshop.

Canadian Beacon Registry System:

Tel.: 1-877-406-SOS1 (7671)
Fax: 1-877-406-FAX8 (3298)

Canadian Mission Control Centre (CMCC) (COSPAS-SARSAT alerts):
CMCC Trenton 1-800-211-8107

Joint Rescue Coordination Centres (JRCC):
JRCC Victoria 1-800-567-5111 (B.C. and Y.T. only) or +1-250-363-2333

JRCC Trenton 1-800-267-7270 (Canada-wide) or +1-613-965-3870

JRCC Halifax 1-800-565-1582 (Eastern Que. and Atlantic Canada only) or +1-902-427-8200

SPOT, Checked

Actual field testing shows the SPOT locator works well when you understand its limitations.

By Langley R. Muir, Ph. D. / Kitplanes

It seems like such a good idea: A small device that will let people communicate with home or emergency services where cell phone coverage doesn't work. It's significantly cheaper than satellite telephones but more flexible than personal locator beacons. The SPOT satellite personal tracker is a great product that should have a huge market amongst a wide variety of outdoor people. The company is aggressively marketing it as a safety device for anyone who goes away from home, and it is available at most outdoor stores and even through London Drug Stores.

I have recently had the opportunity to do extensive testing on the device under a variety of circumstances. My tests show that though SPOT does work as advertised, it does not work as well in practice as an unwary user might expect and could, in some cases, actually be worse than having nothing at all. If, however, you realize and can accept its limitations, it can be quite useful. Other independent tests of SPOT—including ones published on the Cnet.com and USA Today.com web sites—tend to substantiate my findings. My test applications are in small aircraft, automobiles and hiking, skiing and canoeing in Ontario, Quebec, Alberta and British Columbia.

If SPOT worked perfectly and were reliable, the market among aviators, boaters, automobile travelers and all sorts of outdoors people would be huge. The problem is the reliability of the device. If you are in trouble and you need to rely on it to alert the emergency services, it had better work. If it doesn't, but you think it did, you may well be waiting around to get rescued when you should be working as hard as possible to rescue yourself. With experience, you can get a good idea of whether someone might be receiving the messages you are

sending, but you could also get misled, and there is nothing to confirm that any message was ever received by anyone. In addition, if your track messages suddenly stop because of transmission problems while you are still out there, those who are following you could initiate an entirely unwarranted search and rescue (SAR) effort.

SPOT Satellite Personal Tracker.
***Photo credit:** Langley R. Muir*

How Does It Work?

SPOT is a small, bright orange device with a GPS receiver, a low-powered L-band radio transmitter, four buttons and four LEDs, which operates for a long time on two lithium AA batteries.

Once you register it, pay the subscription fee and turn it on, you have the option of sending an OK message, a pre-programmed message (usually some sort of non-urgent Help) or a "911" message, or you can track your location with a message sent approximately every 10 minutes. The OK or Help messages can go up to five different e-mail addresses; the track message is saved for 30 days in an Internet accessible and downloadable file. The 911 message is not only sent to the e-mail addresses, but the SPOT people will actually alert the appropriate SAR centers and get SAR teams on the way. All of the messages are tagged with the time and GPS position, and they come with a hyperlink to show the position on Google Maps. The system is extremely robust, floats, and would survive a large fall. Current U.S. price for the unit is $169.99, with a year's service an additional $99.00; tracking is another $49.99 a year. For $7.95 a year, up to $100,000 of rescue insurance is also available.

The first thing it does, when on, is lock onto the normal GPS satellite system and get the time and your location. Although the manual says that the blinking On/Off light indicates that it is locked onto the GPS system, in fact the light merely shows that SPOT is attempting to lock on. When I turned it on inside a metal-lined room, where there are no electromagnetic signals getting in at all, the light flashed. According to the Canadian representative, it actually only acquires a GPS signal when it is about to send a message, which helps to conserve battery power. There is no indication of the signal strength, the satellites being received or your actual position, and you have no idea whether it has a GPS signal. In the event of you sending an emergency message without a GPS signal, the device will still send a message–but without the location.

The second thing that SPOT does is send the appropriate signal to the Globalstar satellite system, which in turn sends it to a Globalstar ground station where the message is processed and forwarded via the public telephone system and the Internet.

Users of handheld ground-based GPS units or radios will be aware that there are problems with receiving or transmitting a signal when you do not have a line of sight between transmitter and receiver. Dense bush, or being at the bottom of valleys, underground, in buildings or vehicles can easily degrade the signal, as can being in a thunderstorm. There have been many improvements in antenna design and signal processors lately, but just turning the SPOT on is no indication that it is actually processing a signal. And, for that matter, just because the signal is sent, there is no assurance that it was received at the ground station.

The Satellite System

In 1992, Globalstar started to launch satellites, and after many trials and tribulations, began its commercial operations in February 2000 with 48 operational satellites, along with four spares. Initial tests showed excellent service on the telephone system, but the S-band duplex amplifiers started to degrade seriously in 2005.

In 2006, Globalstar announced a second generation of satellites that should remain operational until 2025, and which would take care of problems with the duplex telephone system. The company, in its 2007 Security and Exchange Commission (SEC) submission, anticipated almost complete loss of voice service sometime in 2008, though a number of technical solutions in the works would restore it by 2009. However, SPOT relies entirely on the L-band simplex system, and there are no problems there.

The L-band system is commonly used in all sorts of asset tracking devices and in the transportation industry where there is generally no problem with good sky views. It is a simplex system, however, and signals pass only one way; it would be impossible for SPOT to be inexpensively reworked so that you could get confirmation that your signals have not only been sent, but also received at the other end.

Unlike the Iridium phone system, which will pass a signal from satellite to satellite until it can send the signal to a ground station, Globalstar uses a "bent-pipe" technology, meaning that the sender, a single satellite and a ground station must all be in line of sight before any signal can be passed. The Globalstar satellite cluster operates only up to about 68° N, so there is not, nor will there be, coverage in the Arctic (or in Africa or at sea due to the lack of ground stations). If you know your approximate

position, you can go to the Globalstar web site and download the optimum times for transmission, which will help with the telephone system but should not be necessary for SPOT. A map of current coverage with ground station locations is also available on the Globalstar web site.

Design Factors

Usability of the SPOT device itself is a bit of a mixed bag. It is extremely robust, built to military specifications, floats, and can survive a large fall. The antenna is under the logo, and it is important to hold the device horizontally with the logo up to ensure the best possible transmission. If it is in a pack or inside a sweaty shirt pocket, signals may not get out to the satellite.

The author testing the SPOT device.
***Photo credit:** Anne Edwards*

The belt-clip virtually ensures that many people will carry it on their belts, oriented vertically, when it should be horizontal as it would normally be if placed on an automobile or aircraft dashboard. In any case, the belt clip is not secure. Because there is no positive locking device, it can easily be detached from a belt or a pack by a passing branch or awkward movement. There is a tiny hole through which you could put a lanyard to attach the device to yourself, but it should be much bigger and easier to use.

The device requires lithium-ion AA batteries to ensure design performance over a long period of time and in cold weather. In emergencies, alkaline batteries could be used, albeit with seriously degraded endurance. The buttons used to activate the functions are quite small and need to be held down for at least two seconds to protect from inadvertent operation. They are difficult to use with gloves and impossible with mitts.

The flashing lights can be ambiguous. Pushing the On/Off button for more than two seconds results in a flashing green light every three seconds and simply turns the device on. Pushing the OK button for two seconds results in both lights flashing every three seconds and sending an OK message. It can, however, take up to 10 minutes (according to the manual and up to 20 minutes by test) for the message to actually get sent. Pressing the OK button for more than five seconds puts the device into tracking mode, and again, both lights "flash" every three seconds. There is no indication about which of the two possible modes the device is in, and you cannot be in two modes at once; so you cannot send an OK message while the device is tracking, and you cannot start tracking while it is waiting to send its OK message.

When the device sends a signal, the green lights turn solid for five seconds, but this is easy to miss and there is, effectively, no way of knowing whether a signal has been sent, and as mentioned before, received at the ground station. There are separate buttons for the HELP and 911 messages, and sending these overrides any other messages. A flashing red light starts when the lithium batteries are below 30% charge so that you should have lots of time to change the batteries. According to the advertisements, some of these ergonometric issues have been dealt with in the new version, which should be available soon.

SPOT, Tested

How well does the device operate in practice? If you maintain a clear view of the sky—the manual says you need 80%—then all seems to go well. However, there is seldom a case where you have this much visibility unless you are in the middle of a large flat spot such as a lake, desert or airport, or on top of a treeless mountain. Real-world practice is what actually counts, and it is here that SPOT's limitations show up. In fact, you don't need much view of the sky; all you really need is a clear view of a satellite while it has a clear view of a ground station. On the other hand, the critical portion of the open sky view can easily be blocked by buildings, hills, and most importantly, trees, which are not mentioned in the manual. There are a lot of trees in Canada. In order to get an 80% unimpeded view of the sky, you can have nothing above an elevation of 18° from the horizon. A 33-foot-high obstruction anywhere within 100 feet could be problematic. The tests also show that cloud cover can degrade the reception significantly.

Complete data from all of the tests is available from the author. In an aircraft windscreen, where there is a good view of the complete sky, data returns over 95% can be expected. In an automobile windscreen or motorbike on a wide, divided highway, or in a canoe in the middle of a lake, or even in a carefully selected open area, returns of over 90% are common.

It's not always easy to determine if a signal can get through. In the case of the Stationary 1 test, the device was placed on a table outside with a single layer of tree cover to the south, and the data return was 54%. The Stationary 2 test was done with the device indoors on the south side of the house approximately 5 meters north of the first location and approximately 1.5 meters inside a second floor window covered with a metal blind to within 10 centimeters of the sill and the same tree cover to the south. Even here, with a limited view of the southern sky, we still got about a 54% data return.

Generally, the percent returns drop off quickly as the view of the sky is degraded. If the device was in the pocket of a damp shirt or buried in a pack, few data returns were received. In the bush, with trees and hills about, no data got through. It is generally possible, however, by choosing an open spot with a good view to the south and low obstructions on the horizon, to ensure the message gets through. However, one must be careful of the location. Although almost all of the messages were received by e-mail within a minute or two of sending them, there were a couple of cases where the delay was up to 45 minutes.

Depending on what you are trying to do, SPOT can be very useful. If you simply want to track an aircraft in flight or a vehicle in transit on good, wide roads, then you are probably in pretty good shape. In these cases, the data returns are on the order of 95%, and it doesn't really matter much if one or two data tracking points are missing. If you travel in mountainous terrain or on narrow roads, and the clear view of the sky can be compromised, then you will have to accept a lesser data return. If you want to send other sorts of messages, then it depends a bit on how flexible you are in choosing when and where you can send the messages and how important it is to know whether the message got through. It is also important to warn people who are using SPOT to follow you that you might well have periods of no data return due to transmission difficulties. You would not want them to start an unwarranted search effort simply because SPOT slipped in your pack or you are under a tree.

Your Options

In light of all this, what are the options? A 406 MHz PLB, EPIRB or ELT radiates five watts of power that is satellite tracked, with a low-power 121.5 MHz signal for homing. The five-watt signal ensures that messages will get out unless you are in an extremely bad position. If you push the button, a full SAR effort begins; otherwise, it sits storing batteries. The high power, lower frequency and multiple moving satellites all help to ensure that a signal will be picked up.

A satellite phone is expensive and has about 500 to 800 milliwatts output, which is generally adequate if you have a reasonably clear view of the sky. You can talk to anyone and your messages can be as precise as you wish. If the message cannot get out, you'll know it.

The SPOT device radiates at only 83 milliwatts, is inexpensive and allows you to send up to four types of message. As stated before, you can't be sure the messages have gotten through, but with a bit of care you can improve your chances significantly. If you are on the ground and travel with a group, and wish to remain in some contact with the outside world and can ensure proper positioning, SPOT will convey one of four possible messages—including an urgent call for help. If you travel on your own and want to be fairly sure that you can summon help when you get in trouble, then you need to have either a PLB/EPIRB/ ELT or a satellite phone. If you are alone at the bottom of a cliff or in dense bush, and you're immobile or unconscious, then nothing will work for you.

Summary

Generally, the SPOT has many uses and outperforms the limitations suggested in the user guide. If you travel in an aircraft or in a vehicle on broad, open highways, then SPOT should give you excellent performance. If you want to be able to send a message while in the bush or the mountains and can afford to wait until you or your companions can get to a clear, unimpeded view of the sky, then SPOT looks like it will give you excellent performance.

If you wish to be able to call 911 when you have crashed your airplane or your car is in among the trees, or you are injured while in the woods, the mountains, or the canyons, then you may well be out of luck. The other options will probably give you a better chance of being helped, but not necessarily. That is what risk management is all about— deciding what trade-offs and limitations you are willing to accept based upon the likelihood of an incident and the probable consequences. ■

After a career as a physical oceanographer, which included leading a number of arctic scientific expeditions, Dr. Muir retired from the Federal Government in 1995. Since then he has taught a wide variety of outdoor skills on five continents. He has been an ocean racing navigator, an Outward Bound instructor, and a ground searcher. He is qualified as a navigator, spotter, and ESS with CASARA.

Resources:

Independent test of the SPOT system in California by CNET news.

Info on 406 MHz Beacons

Tests by USA Today reporter in New York

SPOT web site

SURVIVE!

Essential Skills and Tactics To Get You Out of Anywhere – Alive

Les Stroud / Collins, 2008 • Reviewed by Jeremy Derksen / jderksen@shaw.ca

When Les Stroud teaches wilderness survival, he tests his students by asking them to collect enough firewood to last a night. Without even looking at their piles, he then sends them back out to collect five times what they have. Still, writes Stroud, many don't have enough to keep a fire going until morning.

This simple but poignant example from Stroud's book, *Survive! Essential Skills and Tactics to Get You Out of Anywhere – Alive*, emphasizes how poorly equipped and educated most people are to handle a basic survival task. Collecting water, finding food, building a shelter and starting a fire—these critical skills are often neglected by seasoned backcountry travelers much less the average person. Add an extra degree of difficulty—injury, disorientation, harsh weather, lost equipment—and the fragile balance of life can quickly tip.

As host of the popular *Survivorman* TV series, an expert survivalist and a member of the Explorers Club, Les Stroud is an encyclopedia of survival techniques, both common and bizarre. His experience and ingenuity have gotten him through challenging ordeals in many of the world's most inhospitable places ranging from the Kalahari Desert to the Arctic, and the Caribbean Sea to the jungles of Papua New Guinea. In *Survive!*, he shares the benefit of his hard-earned knowledge, from basic techniques like how to use a fire-bow to fashioning winter boots out of automotive upholstery.

The book is structured with perfunctory chapter titles like "Survival Kits," "Signaling," "Water," "Fire" and "Survival First Aid." But make no mistake; this is not just a dry textbook. While Stroud lays out step by step in fine, illustrated detail, the techniques for such skills as constructing a solar still, he also spices the text with personal anecdotes, case studies and the sardonic observations of a wizened bush veteran.

Stroud is at his best when he's bucking conventional wisdom. In a survival situation, one of the most important traits you can have is the ability to adapt. Pack and prepare all you want—*Survive!* includes extensive survival gear checklists to assist with this step—but you can't predetermine the setting, timing or logistics of a mishap. It is the nature of such events that they will come as a surprise.

That doesn't mean that survival can't be practiced by developing skills through repetition, knowing your tools and participating in survival scenarios. However, real life doesn't follow a script. It requires you to improvise, break rules, think beyond convention —and this is where *Survive!* shines.

The unique tips and survival counter-theories Stroud presents force the reader to reconsider accepted wisdom. He brushes aside fears of water contamination: "If your choice is between drinking untreated water and dying of dehydration...drink." While he advocates purifying water when you can, Stroud advocates drinking unpurified swamp water if necessary. "In all but the rarest circumstances," he writes, "drinking untreated water won't kill you."

As for setting priorities, Stroud argues that if immediate safety is established and there is no urgency about shelter, signaling becomes priority two. "You never really know when a potential rescuer may appear," he explains. "You need to be ready to signal *immediately* and *at all times*."

Stroud also applies his unorthodox approach to survival tools. "You are more likely than you think to come across abandoned junk that may be useful," he writes. "Don't consider what it is, but what it could be." Flint, waterproof matches, lighter or fire-bow are all good methods of starting a fire, but Stroud notes you can also spark a blaze with a car battery or the sun's reflection through an ice cube. The list of uses for otherwise unlikely objects is extensive and MacGyver-esque: fishing floats from bubble gum, goggles out of a snowmobile cushion, snowshoes from spruce boughs, moss cups for catching water. He even shares a legitimate use for belly button lint. The point is simple: don't overlook anything.

At its heart, *Survive!* is a field manual. Most people won't memorize all the techniques in the book, at least not without years of practice. While useful and entertaining to read on the couch, this is a book meant to accompany the traveler. But if there is a lesson to take away, it's Stroud's creative, no-holds-barred approach to finding a way to survive in desperate circumstances. "Set fire to a small island if you have to," Stroud writes. "I could live with myself if I had to take drastic measures to be rescued. How about you?"

For fuel, there's always the pages of *Survive!*—in particular, the two blank pages at the back of the book conveniently labeled "Fire Starter." The unwritten point on those pages, that there is nothing too holy in a survival situation, is perhaps the best advice to remember should it arise. ■

Jeremy Derksen suffered hypothermia while backcountry skiing in Yoho National Park, B.C., in his early 20s. This led to an abiding interest in first aid and wilderness rescue. He is a five-year member of the Canadian Ski Patrol System and has backcountry experience across western Canada. Ski editor at Vue Weekly Magazine, he has published in Unlimited Magazine, major Canadian dailies and appeared as a ski industry expert on CBC.

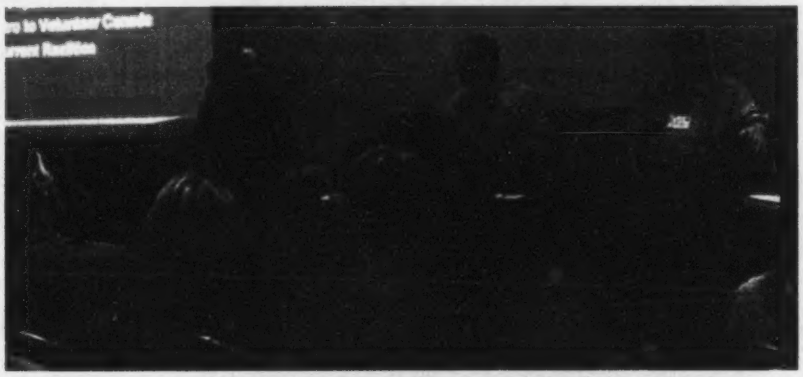
GSAR volunteer workshop in Toronto: A GREAT SUCCESS

By Kim Fauteux, NSS

Over 150 people gathered in Toronto on October 2-4, 2009, for the National Search and Rescue Secretariat's (NSS) Ground Search and Rescue (GSAR) volunteer workshop. The attendees were volunteers eager to better their training skills, as well as GSAR Council of Canada representatives and participants.

The focus of the workshop was the nationalization of *AdventureSmart*, which brought volunteers from every province and territory in the country together to become *AdventureSmart* trainers. With the assistance of the Search and Rescue Volunteer Association of Canada (SARVAC), volunteers who had become Master Trainers, and the *AdventureSmart* team, the NSS was able to put together this "train-the-trainer" initiative.

Developed by the British Columbia Provincial Emergency Program, with the assistance of the NSS, the Royal Canadian Mounted Police (RCMP) and the British Columbia SAR Association, *AdventureSmart* combines online and on-site awareness with targeted outreach. The outreach component utilizes existing best practice programs, such as the RCMP's *Hug-a-Tree and Survive* (for children age 5-11), and the *Snow Safety Education Program*. Other programs were also developed to meet audience needs like *Survive Outside* (older teens and adults). "SARVAC trainers were able to train others to increase capacity in communities across Canada for effective outreach", explained Jacqui Bannach, Senior Analyst at the NSS.



The Town Hall moderators, Carole Smith, Don Lapierre and Harry Blackmore, during the Town Hall.

***Photo credit:** Manon Langlois*

Training Sessions

On October 3rd, four sessions were delivered and participants were trained on the programs that they will be promoting. They were also provided with tips and techniques for best practices in audience engagement, whether talking to kids or adults. As well, the volunteers were given an overview of the National Prevention Strategy, and the critical role they play in meeting the NSS' prevention objective was highlighted.

"The trainers were able to use real-life experiences to illustrate the programs and to make it relevant to their audiences", added Jacqui Bannach. "We provided them with all the tools necessary to go out and make a difference immediately." Along with the training, the volunteers were given PowerPoint presentations, manuals and visual aids to help them deliver their own training sessions.

Town Hall

On October 4th, the attendees were invited to a Town Hall that discussed "Volunteer Sustainability". Don Lapierre, a senior analyst from Volunteer Canada, was there to talk about similar challenges facing the voluntary sector and offer suggestions to the SAR community. There was also a questions and answers session, which was specific to search and rescue. Volunteers were able to share ideas and talk about opportunities. Don Lapierre, Harry Blackmore of SARVAC, and Carole Smith from the NSS, served as moderators during the Town Hall.

Overall, the workshop was a great success and feedback was overwhelmingly positive. The attendees commented on their appreciation of the focused approach of the event and on seeing tangible outcomes.

If you want to know more about the *AdventureSmart* programs or SARVAC, you can visit the following Web sites: http://www.adventuresmart.ca/index.php; http://www.sarvac.ca/. If you are interested in receiving one of the above-mentioned program sessions at your school or in your community, please send an e-mail to teamcoordinator@adventuresmart.ca. ■

Kim Fauteux is a Communications Officer at the National Search and Rescue Secretariat, and is also the editor of SARSCENE magazine.

BOATERS WILL CLICK WITH US

And so will media and boating safety educators

By Stephanie Rankine, Project Coordinator / SmartBoater.ca

Have you ever searched the Web for some boating safety information related to your type of boating, and instead you found yourself in a sea of Web pages relating to dozens of boating safety issues? If so, you aren't alone, and that is why the Canadian Safe Boating Council's NIF project, SmartBoater.ca, was created.

The fact is the information is out there, but the ease of locating and obtaining it is often hard to come by. Enter the SmartBoater.ca Web site, and you will find a single source platform for relevant boating safety information geared towards the public, search and rescue professionals and volunteers, educators and media of all types.

SmartBoater is a three-year project and is in its first year of creation, with a launch of the site occurring in the spring of 2010. SmartBoater.ca is designed to help change recreational boating behaviours on Canada's waterways by collecting past and present boating safety materials, creating new programs, and making it all available in a comprehensive, well organized format.

Specific activity information

SmartBoater.ca is more than just another boating safety Web site. It will provide the information sorted into specific boating activities, whether it be kayaking, fishing, sailing or power boating. Along the way, partnerships are being forged with water safety organizations, law enforcement agencies and specialized water activity groups to ensure that the messaging is properly crafted and targeted.

Ted Rankine speaks to some of the volunteers about the effects and consequences of drinking and boating while the crew is on hand to catch all the action on video.

***Photo credit:** Eric Bruce*

The initial role of SmartBoater.ca is to collect boating safety material that is already available throughout Canada. Government agencies, boating safety organizations and many others have produced, and are producing, boating safety material. These rich resources are being identified, sought out and leveraged. Permission for the sharing of relevant material is the first step in populating the easily accessible Web site. As material is collected, it will be reformatted, as necessary, and the sources will be clearly identified. This will ensure that visitors find the information that they are looking for. In addition to the collection process, production of new and original content is also slated. Over the three-year program, new materials in five key boating safety areas will be created. The first year (this year) is focused on cold water awareness and drinking and boating.

Drinking and boating

One of our new initiatives was a drinking and boating challenge. Ten volunteers were challenged to demonstrate the difference in their boating capabilities, first while sober, and then after consuming a few alcoholic drinks. In partnership with marine units from the York Regional Police, the Ontario Provincial Police and South Simcoe

Police, the volunteers were put to the test in a controlled environment.

An on-water course, a docking exercise and a man overboard scenario were designed to demonstrate the effect that alcohol would have on the safe operation of a vessel. All the activities, including participant interviews, were captured on video tape. The finished product, as well as a variety of video clips, will be available on the site. The results will be an eye opener for the public and media and the downloadable video clips will be useful assets for boating safety educators to use in their outreach activities. This production demonstrated one of the five key messages that will find its way onto the SmartBoater Web site. The other four key messages are: Wear Your Lifejacket, Be Prepared, Take a Boating Course and Be Aware of the Effects of Cold Water.

Target audiences

SmartBoater.ca has been designed to serve three important target audiences; the boater, the media and the boating safety educator, each with their own section on the Web site.

For the recreational boater, the material will be organized into specific water activities, easy to find and enticing to watch and learn from. If boaters have unanswered questions, they will be able to click on the "Ask the experts" link.

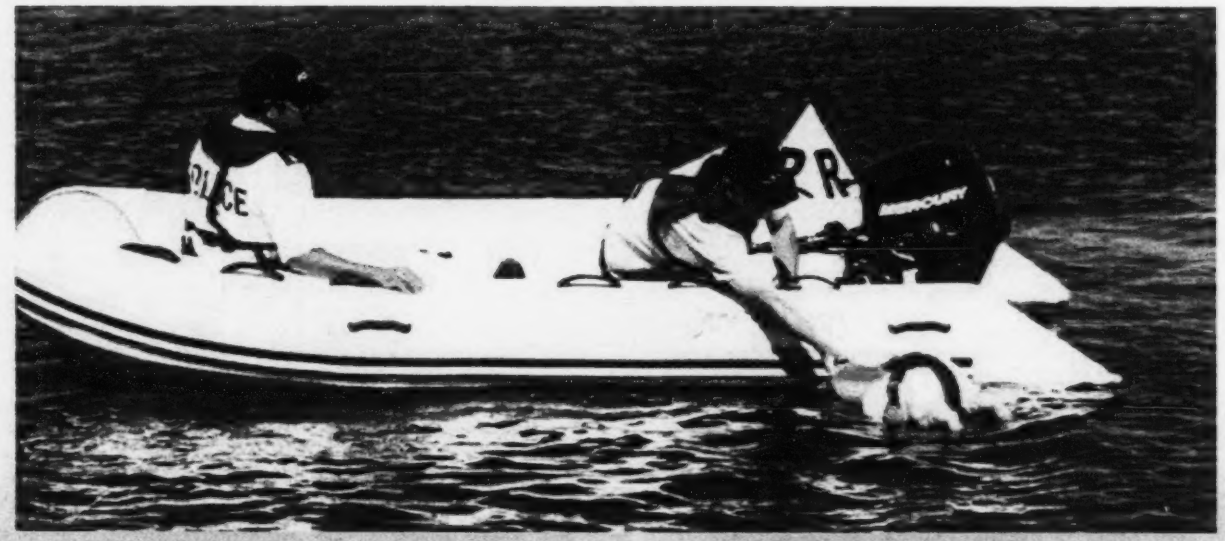
For the media, the Web site will be continually updated with an ongoing series of print and electronic messages, articles and public service announcements available for download and distribution. Since complimentary information will also be available to the public, the media can direct their audience to the Web site for additional information.

The section designed for boating safety educators is a "one-stop-shop" of safety outreach tools. A compilation of existing materials currently used by agencies and organizations across the country, and the collection of newly created materials, will be catalogued and formatted to allow easy identification and downloading. In addition to outreach tools, SmartBoater.ca will also house ideas for lesson plans, PowerPoint presentations, and techniques on how to deliver this information.

To attract visitors to the site, a comprehensive public relations and outreach plan has been created that will leverage existing partnerships in media, advertising and viral marketing. Even the name, SmartBoater.ca, is welcoming. It has not been created to command boaters to be boat smart, but rather to commend them for being smart by staying safe each and every time they are on the water.

Over time, it is expected that SmartBoater.ca will become a place where all kinds of boaters will go to obtain interesting and entertaining boating safety information. Media will be able to use SmartBoater.ca as an ongoing resource, and boating safety educators will hopefully depend on the Web site to be their one-stop-shop for outreach materials. The overall result will be better informed boaters on Canadian waters, a safer boating environment, and a reduction of boating incidents. ■

Stephanie Rankine has spent many years on and around water. A long-time and experienced boater, Stephanie was an active participant with Power Boat Television and past writer for personal water craft safety articles in Boats and Places magazine. Stephanie is now the project coordinator for SmartBoater.ca.



A volunteer, under the watchful eye of not only the marine officer but also the cameras, reaches well over the side of the boat to retrieve the "baby" that has fallen overboard.

***Photo credit:** Eric Bruce*

CALLOUT:

A documentary series on SAR in Canada

By Brian Ross, Fire One Entertainment Ltd.

A new documentary TV series about search and rescue (SAR) in Canada, entitled CALLOUT, is now in production. This New Initiatives Fund project was sponsored by RCMP National SAR Program Coordinator, Sgt. Robert Lajoie, who states that "Not only will the series create heightened awareness, appreciation and understanding of SAR in Canada, it will provide long-term education and prevention resources for SAR teams and the public alike." Thirteen half-hour TV programs will be produced annually in English and French for three years, along with a Web site, public service announcements and training resources.

The series is produced by Fire One Entertainment Ltd., a division of Vancouver-based Third Wave Communications Inc. Fire One's executive producer, Brian Ross, sees the project as "a great opportunity to showcase the unsung heroes who fade quietly into the background after a job well done. SAR people deserve recognition and the public will be fascinated by all the different elements that go into a SAR mission, in particular when they are witnessing a live callout."

Real rescue footage

CALLOUT is definitely live and real. Fire One provides small HD video cameras and HD helmet cams to SAR teams to film rescues in which they are involved. Two key concerns with filming live rescues have been recognized and quickly addressed; the filming must in no way impede a rescue or create safety concerns, and the privacy rights of the subjects and the SAR members must be respected.

A SAR team member does the actual filming according to guidelines developed in conjunction with Fire One. Given the nature of SAR missions and the safety issues involved, this is the only practical way to capture actual rescue footage. The SAR teams also participate in follow-up interviews and reenactments produced by Fire One. Subjects and/or family members are interviewed, and the interviews are included in the segments. To date, many subjects and their family and/or friends have participated in CALLOUT interviews and reenactments and are very happy to be part of the SAR project. They appreciate the opportunity to express their gratitude for being rescued and want the rest of the world to learn from their experience.

Variety of rescues

So far the series has edited eight rescues filmed with ground SAR teams. Even though these rescues feature ground SAR teams, the action still ranges from injured snowmobilers and lost hikers to stranded boaters and plane and helicopter recoveries. The stories are portrayed through the eyes of the SAR team, with a focus on methods, challenges and outcomes. The edited clips with voiceover, reenactments, graphics and music are sent to the participating teams and management to ensure that the clips represent the team and the rescues accurately.

Along with one rescue scenario in each half hour program, Fire One is also including a detailed "vignette" featuring a specific aspect of SAR operations. Most recently, they filmed BC-based tracking experts, Darcy Fear and Bart Bjorkman, searching for a "lost" subject, Nelson SAR's Callie Chatten, highlighting elements of the team's role within SAR and their tracking methods. At the same time, the "lost" subject filmed her actual route with a small HD camera. The experience of the tracking experts and the "lost" subject will be intercut into a very captivating and informative vignette about tracking.

While to date only ground SAR team involvement has been filmed, negotiations are underway with the Canadian Coast Guard and the Air Force to participate in the series to showcase the excellent work done by their personnel.

Chris Armstrong (Nelson SAR) rescues a mother and son stranded on riverside cliff.
Photo credit: Nelson SAR

CASARA and the Canadian Coast Guard Auxiliary will also be approached as the series unfolds to showcase the air and marine volunteers. Helmet cameras, as well as small video cameras mounted inside helicopters, boats and planes, could capture their stories of dedication and professionalism, along with the admiration of a very thankful public.

CALLOUT is slated for broadcast in late spring 2010 on four networks, with more anticipated to participate. Broadcast information and series updates will be available at www.calloutsar.tv, starting January 2010. Information or questions about the series can be directed to info@calloutsar.tv. ■

Brian Ross has nearly three decades of television production experience. He is currently producing CALLOUT: Search and Rescue / AU SECOURS : Recherche et Sauvetage through his companies Fire One Entertainment Ltd. and Third Wave Communications Inc.